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Getting girls in STEM & the dangers of forgetting that Science is Art - someone made it up

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Girlapproved

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Getting girls in STEM & the dangers of forgetting that Science is Art - someone made it up

Abstract

Encouraging girls to participate in STEM is a hot topic that has captured the concern of the world's academic, business and scientific communities. The intention is noble, however the strategies being deployed are reinforcing the very bias society seeks to eliminate. If we wish to advance our evolutionary journey as a species, a shift from "feeling sorry for *disadvantaged* girls" to "fearing STEM without girls' reformation" is imperative. This piece discusses the rise to an initiative to redesign culture: Girlapproved.

Author/Artist Bio

Heidi Danglemaier is an inventor + designer + scientist. She is an expert at creating "Tipping Points" - first to market innovations that become global and mass-market category leaders. Heidi's products generated billions in revenues for the world's biggest corporations. She has activated exponential growth in over 20 industries including the first video games for girls, the first enterprise social media software, financial tools, and retail design, to beauty products, denim, and even tampons. Her work has been celebrated by dozens of publications as wide reaching as New York Times, The Atlantic, Wired, Women's Wear Daily to trade magazines - IDSA, AIGA, ANA, IEEE, ARF, COMPUTER GAMING WORLD. Heidi has a BSc in Physics and a BSc in Computer Science from Western Washington University, an MSc in Artificial Intelligence from the University of British Columbia, and pursued her Phd in Artificial Intelligence and Quantum Physics at Princeton. Heidi left academia because of her deeply-felt mission to reinvent a future worthy of humanity. In 2005 she made a radical change and started an initiative to reinvent the future of consumerism called Girlapproved, electing to work exclusively work with young female artists. "Team Girl" proved to be most rational, competitive, self-optimizing move Heidi could make. The beginning of 2018 will mark the end of a 12 years of empirical experiments exploring a new frontier of economic and cultural potential and growth, as well as the untapped intellectual and creative potential of females. Heidi and her teams of girls have achieved results that business and scientific believed impossible. Together, they discovered a universal algorithm for forecasting market tipping points. They also proved that "gut feelings" and "women's intuition" can be measured and applied, reforming intelligence as we know it. Finally, they pioneered a generalized extension to the scientific method to include this new information opening a frontier of universal truths and laws of nature. Starting December 2017, Heidi is opening the door of Girlapproved and sharing this research with the public, activating a global challenge to the foundations science, economics and cultural design - the first intelligence movement pioneered by females. www.linkedin.com/in/girlapproved Camilla Hermann has the best training education could offer. She began at The Winsor School in Boston and then attended New York University where she received her BA from the Gallatin School for Individualized Study with honors. Driven by a desire to be of service, Camilla turned to international development. She co-founded GroundUp Global, an organization that worked with the Liberian refugee population in Ghana. In partnership with the Liberian Embassy in Ghana, UN, Ghana Refugee Board, and International Organization of Migration, Camilla assisted in the repatriation of 3500 Liberian refugees back to their home country. Her next humanitarian focus was wiping out epidemics - building life-saving technology that increased contact tracing coverage of health workers during the 2014 Ebola epidemic. She secured partnerships with Google, The Liberian Government, WHO and Doctors Without Borders. Her work has been featured at the Clinton Global Initiative University Conference, the United Nations NGO Conference, and was selected as a semi-finalist for the Ashoka Changemaker Challenge. Collaborating with the most rigorous and impactful social institutions, Camilla soon realized that these organization had stopped working and were now part of the problems. Despite her

accomplishments it was evident that the most important contribution she could make was challenging and reforming contemporary systems of social innovation at large. Camilla is a member of Generation Truth - she has courage, conviction, and the strength to draw a line for justice. www.linkedin.com/in/camillafhermann
Art credit: Maria Ianne, is an activist graphic designer in New York City who is a graduate of Marist College. Maria Ianne collaborated with Heidi Danglemaier to create Generation Truth art for this article.

Keywords

Girls, Girlapproved, STEM, STEAM, Science, Art

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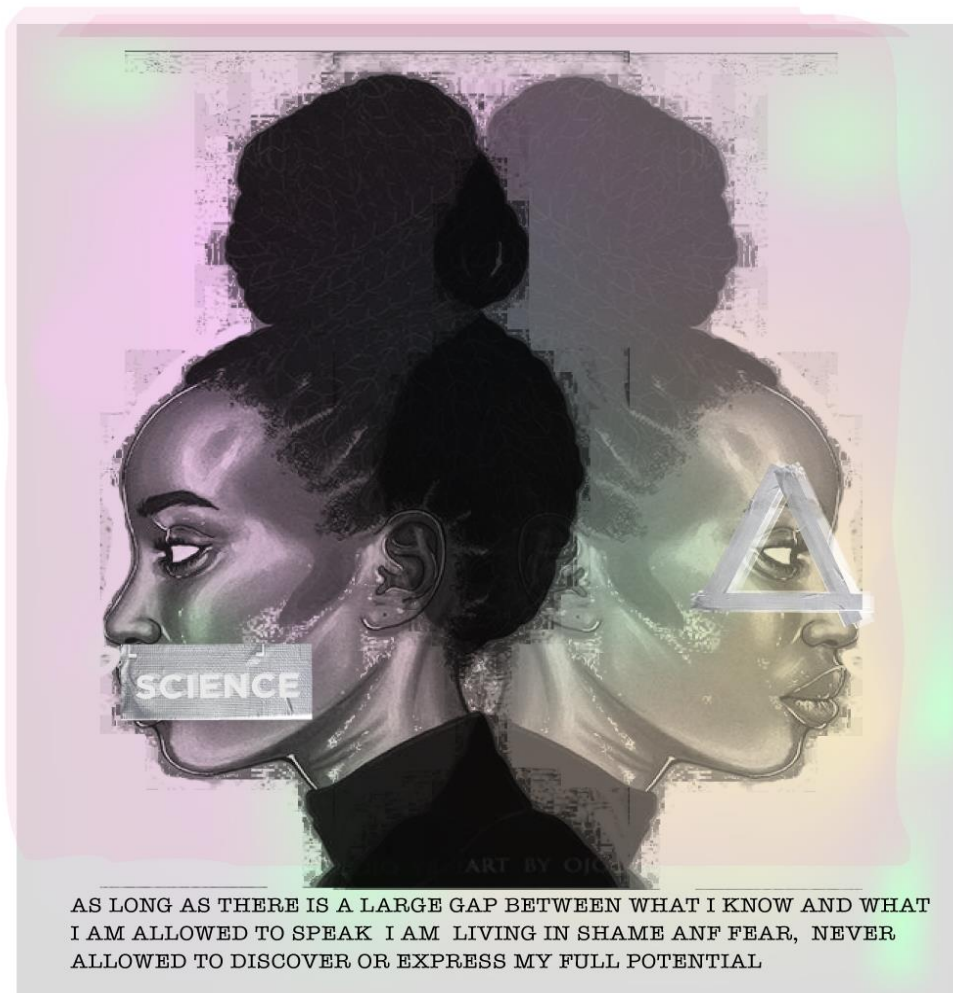
Getting girls in STEM & the dangers of forgetting that Science is Art - someone made it up.

Heidi Therese Dangelmaier & Camilla Herman

Encouraging girls to participate in STEM is a hot topic that has captured the concern of the world's academic, business and scientific communities. The intention is noble, however the strategies being deployed are reinforcing the very bias society seeks to eliminate. If we wish to advance our evolutionary journey as a species, a shift from “feeling sorry for *disadvantaged* girls” to “fearing STEM without girls’ reformation” is imperative.

Living in Conflict

Heidi Therese Dangelmaier & Maria Ianne



When we promote girls to study science and tech so that they can “keep up with the boys,” we are idolizing the male mind and the science he created. By putting science on a pedestal, we inadvertently discourage (and suppress) females from challenging the accuracy of a male-conceived paradigm of intelligence, truth and progress. I learned this the hard way as a female who believed that studying science was purist form of human endeavor.

I am a scientist and inventor who has created dozens of globally successful products for the world’s largest corporations from *Sega, Procter & Gamble, Nokia, to Walmart*. My innovations range from video games, social media apps, consumer goods, to mass fashion. Thirteen years ago, I left the scientific community to start an initiative to redesign culture. I broke up with male scientists and technologists, and choose a global team (1000+ strong) of young adult female artists as my collaborators. Instead of working in a sterile laboratory I opted to use the live consumer market as my workshop.

My journey to “TEAM GIRL” started in my twenties. I had made it to the top of a male dominated field. I won a full Phd scholarship to Princeton in Quantum Physics and Artificial Intelligence, collaborating with the worlds' most brilliant minds. In conventional metrics, I had risen to aspirational heights for females, but my reality was the opposite. I soon discovered that could not participate in science without oppressing my innate perceptual and intellectual capacities.

Sitting in class I found myself pondering questions I was criticized for posing, such as “*Is the design of the lab rats’ cage causing the animals to be depressed, negatively impacting the accuracy of the studies?*” “*Why do technologists rate artificial intelligence on how much data gets transmitted rather than whether the intended meaning was successfully exchanged?*” My inquiries would be answered with a reminder that this is neither the design nor the philosophy

department. I received many concerned invitations to career counseling, lest I be pursuing an ill-suited professional path.



**Super
Objective
Truth**

*Heidi Therese
Dangelmaier
&
Maria Ianne*

I was faced with a dilemma. Do I stop challenging accepted science, avoid conflicts, and get more papers published? Do I lie about my observations and silence my curiosity? Or, do I choose truth and be ostracized from the academic community? It was in the height of that predicament that the boldest EUREKA I have ever had struck me: *what if I am not the problem?* What if science was instead? What if, by nature of my gender, I can innately detect valuable information that my male counterparts were not capable of perceiving? And, what if my thoughts

are not subjective and irrational, but universal truths about nature and reality that are outside the current language of science?

I started to speculate if science was optimized around men's experience of reality? Was "his" concept of objective reality only true if "he" was the instrument doing the experiments? Could there be measurable parts of nature that his "subjective" instrument and his scientific paradigm excluded? And what if this missing intelligence was pivotal to human stability and progress?

The questions I asked irritated my professors. In isolation, I was a lonely "bit" of data - a statistically insignificant sample set. But, what if the **only** reason I was an anomaly was because I was the **only** girl in the room. For a claim in science to be objective it must stand the test of peer validation. How could I empirically prove that my thinking was logical and intelligent when none of the males around me perceived the world as I did? What I needed was a peer review board of girls!

Inspired by the prospect of mapping an undocumented frontier of human perception and intelligence, I began experiments under the name Girlapproved. It felt long over-due for females to test and measure their intellectual capacity on their own terms. In order for us to effectively test theories of unique female capacity, we had to recognize and then disassemble any language, methods and paradigms of thought that had been created by men alone. This process empowered us to declare a new standard of scientific inquiry that accounted for types of intelligences that have

SCIENCE

#SomeDudeMadeItUp and maybe he did not get it all correct. Science is set of rules created to describe nature. It is not nature itself it is a collection of beliefs, formalized laws, computations that is proposed, voted in, marked and deployed - and in this case by men.

historically been excluded, such as female intuition. Much like men of science had for thousands of years, I set out to find passionate peers, a sisterhood of scientific inquisition.

I launched the Girlapproved Experiment by posting advertisements in New York City art schools. *Are you a girl and worried about where culture is going? Are you being taught things that do not feel correct? Do you have ideas on how to fix problems that worry you? Do you want to help re-invent a future you would rather live in?* Unlike the men of enlightenment who exercised elitist-exclusivity in regulating which males participated in scientific inquiry, I let in girls of all educational backgrounds, ethnicities, countries of origin, and socio-economic positions. Any girl who was compelled to join was accepted.

Generation Truth | Beyond a Man Made Paradigm of Intelligence

Heidi Therese Dangelmaier & Maria Ianne



INTRODUCING THE YOUNG FEMALES OF GENERATION TRUTH

The ad responses started as dozens, quickly multiplied into hundreds, then thousands. In every sector of society were pockets of young females who did not see their belief systems reflected in their environments. Beneath the public face of culture, I was witnessing a global

movement of young females ready to opt out of any pre-existing system that was forcing them to conform and forfeit beliefs that violated their sense of truthfulness and self. These girls trusted what their internal compass told them, even when it contradicted their education. I called them Generation truth. A borderless nation that was drawing a new line of personal accountability, a healthier benchmark for females at large. These girls felt a duty to something larger than just themselves and were not willing to lie to earn the approval and prizes granted by the upper echelons of authority and power.

So where does art enter this conversation? That's BIG EUREKA #2 - the moment we woke up and realized that science, math, technology, and the culture it drove, are, in fact, all art. By art we mean "art-i-fact" - a product of a human ingenuity. One of the core learnings of our early experiments was that everything we are taught through education systems and culture as 'true' was, in fact, made up. Culture, politics, medicine, education, national holidays, the American dream - the whole dang enchilada is art(ifact).

This reckoning did not come easily. It took hundreds of experiments to scrape away deep cultural conditioning, break out of ingrained constructs, and finally think for ourselves. The men who created the building blocks of human thought are so revered in our culture that their ideas seemed beyond reproach - sacred. But no belief, idea, or truths descend fully formed, from the heavens above. If we remove all the pomp and circumstance, all these ideas come down to a bunch of super smart, inspired guys who brainstormed, conceived, and executed on their inspirations. Everything we think of as "true" is man-made.

Unfortunately, females have been so busy trying to measure up, fit in, lean in, and prove ourselves to men, particularly in science and tech that we forgot to ask ... *Do we agree with his ideas? Are his results even correct? Is this the best we can do, or just his best?* Why would we as

females believe that man understood nature and reality better than us? Why should we be measured by a ruler we never created?

Man- Made Education

Heidi Therese Dangelmaier & Maria Ianne

And how could girls ever know their natural intellectual and creative potential if what matters was “made up” without our participation?

The birthright of being born a Girl is larger than an invitation to curate



and participate in man’s creation: it is an invitation to imagine and manifest our greatest potential. It is our responsibility, as a united front of females, to explore the fundamental questions of our existence. It is our duty to realize the potential of our own instrument, and to contribute our findings, just as man did, to driving the frontiers of knowledge and human evolution.

What message should we use to get more girls into STEM? Teach them that culture is one big art project and **no one** owns the rulebook. Tell them that it is their birthright to question all

that came before. Remind them they have free will, and have not only a right, but an obligation to trust their instrument. Teach them to exercise personal integrity in all they do. Emphasize compassion - most people are good and do the best with the tools they have access too. Give them permission to change anything they want, because it's now their turn to play master-creator and design the world they want to live.